

Swedish Climbing Federation 2023-05-22

Safety Notice



Bolt failure

Near miss incident / safety concern

Gothenburg, Sweden

October 2022



Background

In October 2022 during inspection and inventory work by the bolting committee of Gothenburg climbing club, Sweden, a Petzl Longlife bolt was pulled out by hand (picture below).

The Gothenburg bolting committee immediately decided to carry out a test on all known Petzl Longlife in the area and by the end of October most of them had been tested. The last few bolts were tested during the first half of November 2022.



The Petzl Longlife, type 1, pulled out by hand October 2022.

Test method

The test consisted of an axial pull with 6 kN while tapping the bolt sideways (radial) with a punch tool and a hammer. If the force remained at 6 kN during and after the test the bolt was classified as "not dangerous". If the load decreased during the test, or if it was not possible to reach 6 kN, the bolt was removed.

The definition "not dangerous" does not imply the bolts are considered "safe". The test load is relatively low, 6kN while the breaking load of bolts are generally 15-20 kN axial. The 6 kN load was chosen since this is slightly higher than normal forces in a fall but still just below the point of plastic deformation for the hanger. This is the reason the definition "classified as not dangerous" instead of "classified as safe" is used.



Bolt types tested

In the Gothenburg area there have been two different versions of the Petzl Longlife used: Which we call "Type 1" and "Type 2".

Type 1 has been installed 1988-1991 and *Type 2* has been installed 1990-1991.

There are also two later generations of Petzl longlife, *Type 3a* and *Type 3b*, which have not been used in the Gothenburg area and therefore we lack knowledge about these.





Geological conditions

The rock in the Gothenburg area consists of granite and gneiss of high quality, so expansion bolts normally have a very high strength.

Test result

- 40 *Type 1* and 17 *Type 2* Longlifes have been found and tested. (Additional two *Type 2* bolts are known, and will be tested.)
- All of the *Type 2* bolts have been classified "not dangerous", according to the definition in the above mentioned test method.
- Whereas only 24 out of 40 *Type 1* bolts are classified as "not dangerous".
- The maximum force applied during removal of the bolts that didnt pass the test varied between 3 and10 kN.
- 40% of the Type 1 bolts either were pulled out with less than 6 kN load, or they couldn't hold the 6 kN load during the test and moved slightly.

Recommendation

The Swedish Climbing Federation recommends climbing clubs, organisations and climbers to:

1. Carry out an inventory of Petzl Longlife bolts in their region

and

2. If any Petzl Longlife *Type 1* is found, these are replaced as soon as possible.

We do not have evidence enough to say whether the three later versions Type 2, Type 3a and 3b (all with Petzl-logo) are safe or dangerous to use. Petzl Longlifes should be evaluated together with other anchors if they need replacement. It can be difficult to prioritize between replacement of different bolts and it depends on many aspects (e.g. bolt-types, material, local corrosion, geology).

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Swedish Climbing Federation Safety Committee 2023-05-22